Comprehensive assessment of MPAs and OECMs in Puerto Rico's marine jurisdiction

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TABLE OF CONTENTS

INTRODUCTION 3

METHODS 4

Definitions 4

RESULTS 7

Marine Protected Areas 7

Other Effective Area-based Conservation Measures 15

ACKNOWLEDGEMENTS 20

REFERENCES 21

Introduction

The Caribbean Biological Corridor, a ministerial initiative among Cuba, Haiti, Dominican Republic, Puerto Rico and Jamaica, seeks to promote collaborative strategies among these countries to identify, monitor, and protect critical ecosystems, species, and their habitats in the region (Gerhartz-Muro and Viña-Davila). One of the expected outcomes of this effort is the identification and establishment of marine protected areas whose designation would contribute to the 30x30 Aichi Global Biodiversity Target that seeks to conserve 30% of the land and sea by 2030.

The most recent island-wide compilation of protected areas (PA) in Puerto Rico's was completed by the Protected Areas Conservation Action Team, a multiagency effort under the Caribbean Landscape Conservation Cooperative framework (Gould et al. 2016). This new inventory adopted a common language proposed by the International Union for Conservation of Nature to define a protected area which allowed increasing the amount of protected land for conservation in Puerto Rico by two-fold (from 8% to 16%) (Castro et al. 2019). The project was discontinued after the Program was dissolved in 2019 and since then, no formal updates have been conducted to the spatial layer of protected areas.

The current review updates the marine component of the database which includes a recently designated marine protected areas (MPAs) in Puerto Rico's waters. Furthermore, areas that could potentially be considered as other effective area-based conservation measure (OECM) within local Puerto Rico territorial waters and the USA Economic Exclusive Zone (EEZ) were collated and reviewed under the criteria set forth by the Convention on Biological Diverstiy (CBD).

As part of this exercise the report shows the extent and location of current MPAs, what they seek to protect and by what agency or institution are administered. The report also highlights which of those currently have approved management plans, and an update of information relevant to any future assessments of their effectiveness.

Methods

Published literature and locally available documents of the jurisdictions, conservation and protection of marine ecosystems were reviewed. Puerto Rico has local governing legislation over the marine waters near the coastline up to 9 nautical miles from shore but is surrounded by USA federal jurisdiction waters in the exclusive economic zone (EEZ). Therefore, depending on the locations of the marine areas these may be subject to different legal conventions at different levels (local vs. federal). Online protected area inventories and databases were consulted to generate a list of areas that could be considered MPA and OECM in the region. For example, the Essential Fish Habitat (EFH) Mapper (https://www.habitat.noaa.gov/apps/efhmapper/?page=page_6) displays the area designated as EFH and habitat areas of particular concern (HACP) in the Caribbean region under the Fishery Management Plan for the US Caribbean. The De Facto MPA Database is another database designed by the MPA Center to catalog De Facto MPAs in the U.S. Areas around Puerto Rico that met the MPA or OECM characteristics were selected to include them in this analysis.

We also held meetings with planning and GIS specialists of different government agencies (The Puerto Rico Planning Board and the PR Department of Natural and Environmental Resources) who provided significant input to this report. Primarily these meetings provided an update on the status of management plans for the MPAs designated locally. Data were revised in ArcGIS to detect any overlapping designations, differences in the boundaries and names as well as classifications.

Definitions

Puerto Rico legislation does not have a specific definition for marine areas under protection. Instead, there are areas designated as Natural Reserves under local planning board definitions or Marine Reserves under the fisheries law that can be considered a marine protected area (MPA). The MPA is defined by the IUCN as: “A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (Day *et al.* 2019). A similar term used in at the US federal level of marine protection is the marine managed area (MMA) that includes at least 29 locations in Puerto Rico (Schärer-Umpierre et al. 2014), all of which were also considered for this analysis.

The term ‘‘intertidal’’ is understood to mean the shore zone between the mean low water and mean high water marks. An MPA may be a marine component part of a larger site that includes uplands; however, the terrestrial portion is not considered an MPA. For mapping purposes, an MPA

may show an associated terrestrial protected area. For this analysis we did not include areas of terrestrial and intertidal zones, only the marine waters of an area designated as a protected area. For example, the coastal reserves that include wetlands that may be influenced by the oceanic waters during tidal flow, but no ocean within the boundaries are considered terrestrial and not included as MPA for this analysis.

In the US Caribbean federal jurisdiction waters also referred to as the economic exclusive zone (EEZ), which extend beyond 9 nautical miles (nm) from the coastline in Puerto Rico to 200nm, at least seven marine areas are designated by the Caribbean Fisheries Management Council (CFMC) as Ecosystem Conservation Areas (NOAA 2023). These areas include those designated as marine conservation district (MCD) and habitats of particular concern (HAPC) based on the special needs to control fishing activities due to the occurrence of confirmed spawning locations of reef fishes managed under the island-based fishery management plans.

Other effective area-based conservation measure (OECM) are considered by the convention on biological diversity (CBD) Decision 14/8 as an OECM as “a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socioeconomic, and other locally relevant values.” (Jonas et al. 2024). Some criteria recognized by IUCN that apply to OECMs are included in Table 1. To fulfill OECM criteria a marine area subject to fisheries management must be monitored to demonstrate benefits to the habitats or biodiversity within that area.

Table 1. CBD Criteria and sub-criteria for OECM (Jonas et al. 2024).

	CBD criteria	***Sub-criteria***
A	Not a protected area	
B	Area is governed and managed	1) Geographically defined space
		2) Legitimate governance authorities
		3) Managed
C	Achieves sustained and effective contribution to in situ conservation of biodiversity	1) Effective
		2) Long-term
		3) In situ conservation of biological diversity
		4) Information and monitoring
D	Associated ecosystem functions and services and cultural, spiritual, socio-economic and other locally relevant values	1) Ecosystem functions and services
		2) Cultural, spiritual, socio-economic and other locally relevant values

Results

Marine Protected Areas

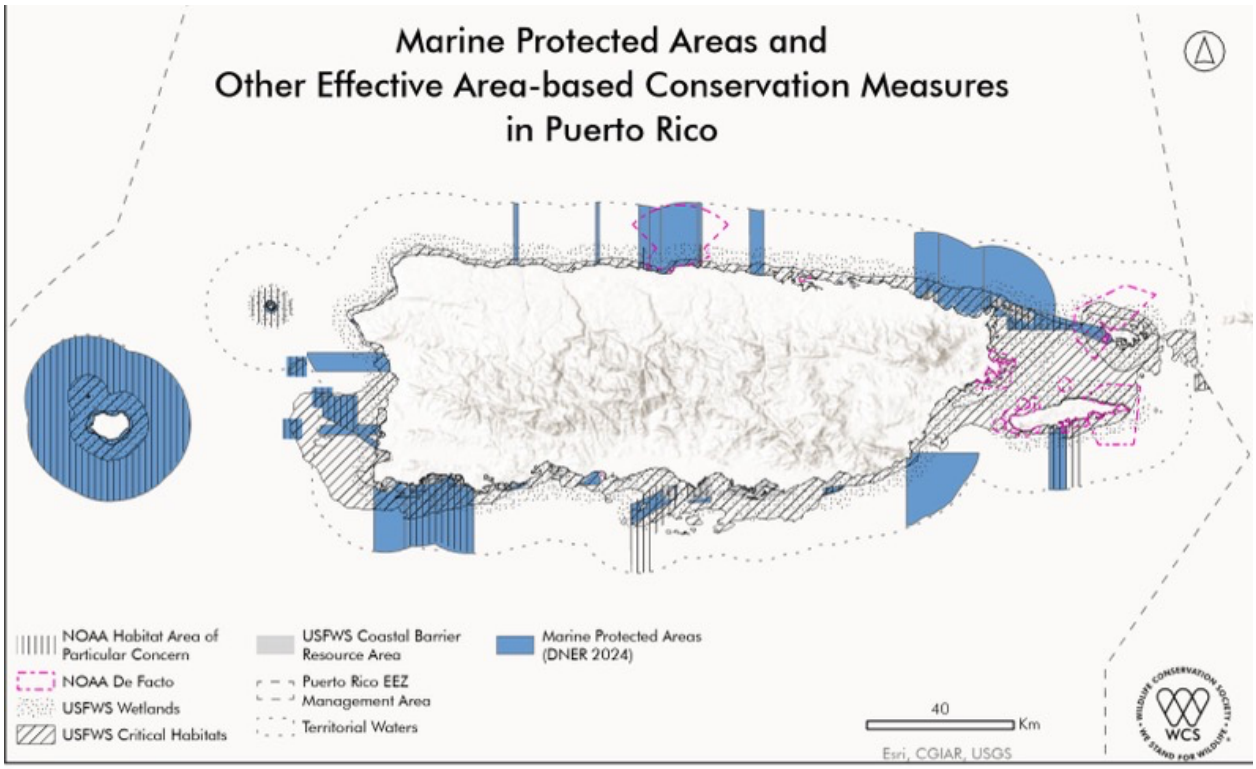
For the Puerto Rico territorial and federal jurisdiction areas 34 MPAs were identified. Thirty-one are completely in PR waters, two are composed of a combination of federal and local waters, and one is completely in federal waters. These MPAs cover 29% of the local jurisdiction waters (calculated as 13,552 km^2) and less than 1 percent (0.7%) of local waters are located in no-take zones or marine reserve (Table 2, Figure 1). This calculation includes the most recently designated MPA, Jardines Submarinos de Vega Baja & Manatí on the north coast of the island (Figure 2).

Seven Natural Reserves that are composed only of marine areas, without territorial components further than wetlands, beaches or rocky shores have been designated and are legally administered by the local environmental agency DNER. These are delimited near shore by the terrestrial maritime zone, which is vaguely defined in the laws that designate these MPAs, referring to coastal management zone regulations and subject to interpretations that require a '*deslinde'* or demarcation of the limit of the tidal influence on the shore. Four MPAs were designated as Marine Reserves, with marine boundaries and coastal delimitations as above. Twenty remaining areas are made up by a Marine Extension of a terrestrial protected area. These wer are added to the original designation legislation administratively to extend the jurisdiction of the protected area.

Of the federal jurisdiction MPAs, three seasonally protected areas are located off western Puerto Rico. These are Bajo de Sico, Tourmaline and Abrir la Sierra Seasonal Closure Areas (Figure 3). All of these can be classified as MPAs due to the year-round gear restrictions (no anchoring and no bottom-tending fishing gear) as well as seasonal fishing bans during 3 or 6 months that repeat yearly. Abrir la Sierra and Tourmaline have all fishing prohibited within the boundaries for 3 months (December to February, whereas Bajo de Sico has a prohibition to fishing and possession of reef-managed species for 6 months, from October to March allowing fishing for highly migratory species (under HMS regulations). These regulations are included in the Puerto Rico Fishery Management Plan (CFMC 2019) and the code of federal regulations 50 CFR 622 and apply in the EEZ.

Two of these MPAs, Bajo de Sico and Tourmaline, have areas of shared jurisdiction between federal and Puerto Rico territorial waters within the MPA boundary. Therefore, the closures stated in the federal regulations only apply to areas in the MPA under the federal waters EEZ. Territorial fishery regulations, under the DNER purview, do not prohibit fishing during the three- and six-months closures in local jurisdiction waters. Regulations differ between jurisdictions inside these

seasonal MPAs and are only compatible regarding the year-round prohibition of bottom tending gear (DNER, 2010), which prohibits traps, longlines as well as gill and trammel nets in both the territorial and federal jurisdictions within those three areas. Regulations specific to the months and species allowed when fishing is prohibited are incompatible between jurisdictions within Bajo de Sico and Tourmaline MPA boundaries and reduce the effectiveness of these MPAs to protect an important fishery species, the red hind (*Epinephelus guttatus*), a small grouper that forms spawning aggregations and migrates along the habitats contained within the three MPAs. The fisheries related effectiveness of the marine managed areas (MMA) in the US Caribbean are further reviewed in Schärer-Umpierre et al. 2014).



This map depicts Puerto Rico's MPAs and candidate areas to be assessed as OECMs for their role at protecting marine habitats, species, and ecosystem services.

Figure 1. MPA & OECM areas in Puerto Rico.

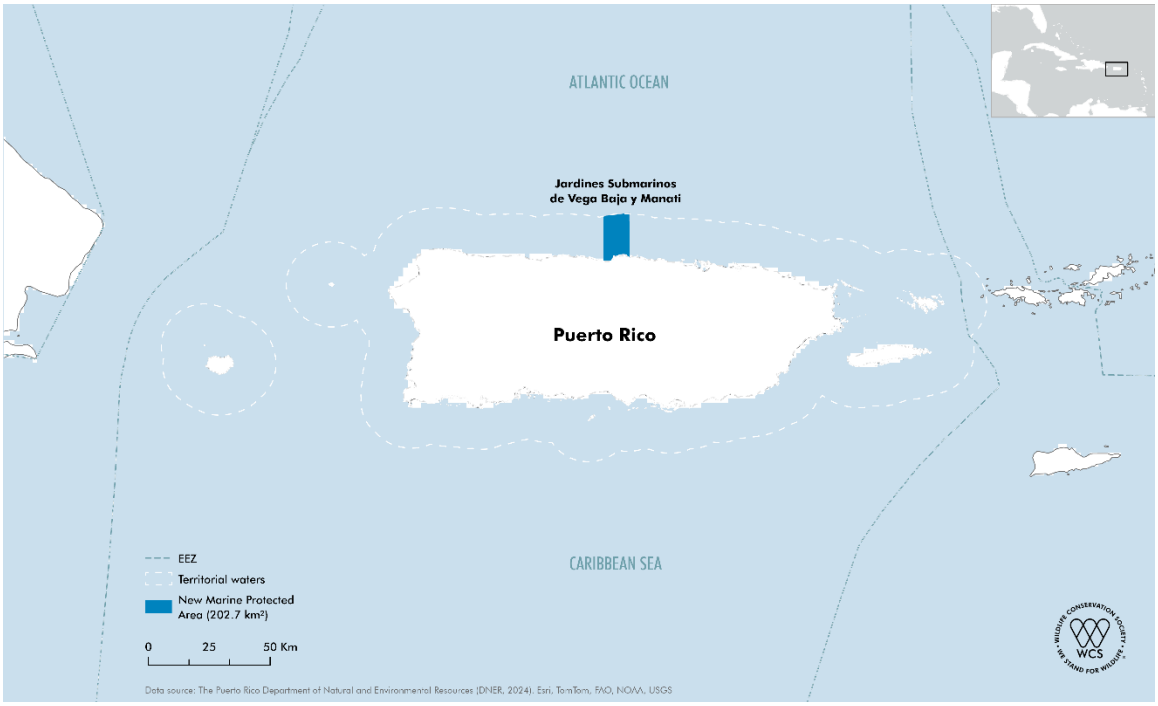


Figure 2. Jardines Submarinos de Vega Baja & Manatí MPA in northern Puerto Rico.

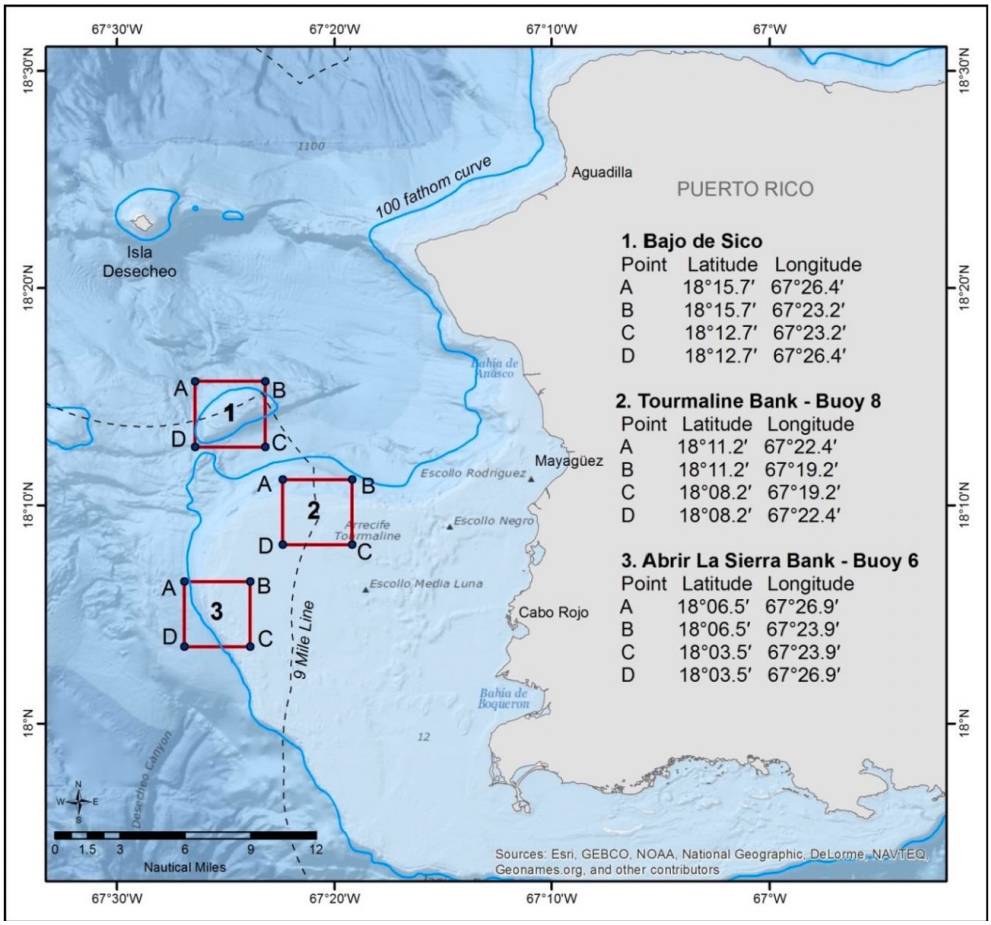


Figure 3. Federal jurisdiction MPAs of Puerto Rico off the western insular shelf of the island.

Most of the local jurisdiction MPAs were designated by the Puerto Rico legislature, which orders to the DNER to manage the MPA. A few of the MPAs were proposed by the DNER and approved by the Planning Board resulting in a final designation. Each one of the local MPA designations is defined to an extension of nine (9) nautical miles, which is the limit of the Puerto Rico jurisdiction waters. However, upon review of the geographical boundaries in the official geographical database reviewed, not all boundaries reached the distance of 9 nm from the coastline (Figure 4). No attempt was made to adjust these limits to match the limit of the Puerto Rico waters. Additionally, one of the MPAs as designated by marine extension (Ext. Marina del Bosque Estatal de Boquerón) was found to have a duplicated polygons in the official MPA database received from the DNER. For this analysis only one of these was used to calculate the areas covered by MPAs in Puerto Rico.

Table 2. List of MPAs and their area (km^2) of marine surface within the geographical boundaries of Puerto Rico jurisdiction waters (< 9 nautical miles from shore).

Name	Designation	km^2
Reserva Natural La Parguera	Natural Reserve	354.1
Reserva Natural Jardines Submarinos de Vega Baja	Natural Reserve	178.3
Reserva Natural Estuarina Laguna del Condado	Natural Reserve	0.4
Reserva Natural Canal Luis Peña	Natural Reserve	6.3
Reserva Natural Arrecifes de Tourmaline	Natural Reserve	74.6
Reserva Natural Arrecifes de la Cordillera	Natural Reserve	100.8
Reserva Natural Arrecifes de Guayama	Natural Reserve	8.1
Reserva Marina Tres Palmas	Marine Reserve	0.9
Reserva Marina Aguas Costeras Isla Desecheo	Marine Reserve	7.4
Reserva Marina Cueva del Indio	Marine Reserve	0.3
Reserva Marina Arrecife de la Isla Verde	Marine Reserve	0.9
Ext. Marina Reserva Natural Punta Yeguas	Marine Extension	262.4
Ext. Marina Reserva Natural Pantano de Cibuco	Marine Extension	19.9
Ext. Marina Reserva Natural Isla Caja de Muertos	Marine Extension	55.1
Ext. Marina Reserva Natural Hacienda La Esperanza	Marine Extension	50.6
Ext. Marina Reserva Natural de Isla de Mona y Monito	Marine Extension	1512.7
Ext. Marina R.N. Punta Petrona	Marine Extension	30.9
Ext. Marina R.N. Punta Guaniquilla	Marine Extension	8.6
Ext. Marina R.N. Punta Cucharas	Marine Extension	13.8
Ext. Marina R.N. Playa Larga El Paraíso	Marine Extension	67.5
Ext. Marina R.N. Mar Chiquita	Marine Extension	52.9
Ext. Marina R.N. Las Cabezas de San Juan	Marine Extension	266.9
Ext. Marina R.N. Finca Nolla	Marine Extension	22.1
Ext. Marina R.N. Finca Belvedere	Marine Extension	39.9
Ext. Marina R.N. del Río Espíritu Santo	Marine Extension	117.7
Ext. Marina R.N. Cueva del Indio	Marine Extension	15.6
Ext. Marina R.N. Corredor Ecológico del Noreste	Marine Extension	263.1
Ext. Marina R.N. Caño La Boquilla	Marine Extension	105.8
Ext. Marina R.N. Bahía Bioluminiscente de Vieques	Marine Extension	80.9
Ext. Marina del Bosque Estatal de Boquerón	Marine Extension	160.6
Ext. Marina Bosque Estatal de Guánica	Marine Extension	14.2
Bajo de Sico & Tourmaline (PR waters)	Seasonal closures	26.7
Total Area		**3,920**

* Abrir la Sierra is not included in this table as it is located completely in federal waters.

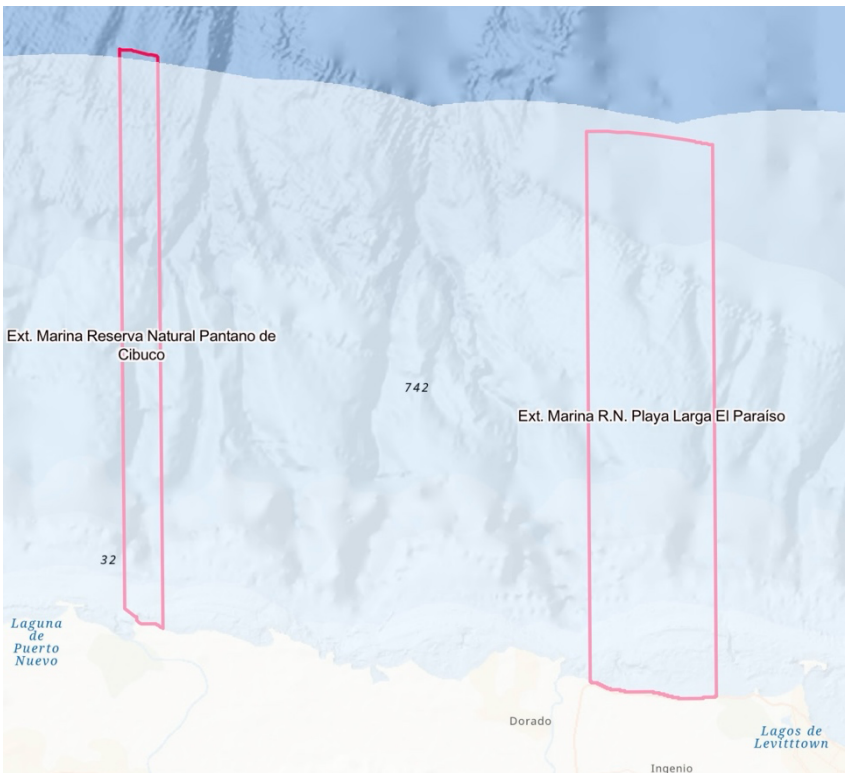


Figure 4. Discrepancy between the seaward limit of two MPA polygons (red line) and the distance calculated as a buffer of 9 nm from the coastline (white shading).

Twelve MPAs had at least one approved management plan available for review (Table 3). Some of these plans were created and are managed in conjunction with third parties under co-management authority or grants of the DNER. Unfortunately, most were outdated (more than 10 years) or not officially implemented by the competent administration. The co-management agreements in some of these MPAs are partially implemented despite the lack of DNER personnel assigned to that MPA nor any funding as they lack a recurring budget. This was identified as a significant limitation to the implementation and effectiveness of MPAs on the island (Reillo-Rey & Rosario-Perez, 2008; Espinoza-Chirinos and Grasela, 2011).

Table 3. MPAs with approved management plans and the year it was revised.

Name	Year
R.N. Bahía Bioluminiscente de Vieques	2010
R.N. Corredor Ecológico del Noreste	2008
R.N. del Río Espíritu Santo	1994
R.N. Isla de Mona y Monito	2011
R.N. Hacienda La Esperanza	Unknown
R.N. Isla Caja de Muertos	2010
R.N. Punta Yeguas	Unknown
Reserva Marina Isla Desecheo	2011
Reserva Marina Tres Palmas	2008
Reserva Natural Arrecifes de la Cordillera	2009
R.N. Canal Luis Peña	2008
R.N. Estuarina Laguna del Condado	2016

At least eight MPAs include no-take zone (NTZ) or are designated as Marine Reserves where extraction is not allowed under the regulations of the Puerto Rico Fisheries Law (# 278) or by specific legislation that created the MPA and specifies that level of protection (Table 4). These year-round NTZ make up an area of 97.3 km^2, which is equivalent to 0.7% of Puerto Rico territorial waters (calculated as 13,552 km^2).

Table 4. No take zones and marine reserves of Puerto Rico and area (km^2) of marine surface.

Name	km^2
Reserva Marina Cueva del Indio	0.32
Reserva Natural Caja de Muerto (NTZ)	0.39
Reserva Natural Estuarina Laguna del Condado	0.41
Reserva Marina Tres Palmas	0.89
Reserva Marina Arrecife de la Isla Verde	0.94
Reserva Natural Canal Luis Peña	6.3
Reserva Marina Aguas Costeras Isla Desecheo	7.37
Reserva Natural Mona & Monito (NTZ)	80.7
Total Area	**97.3**

Some of the boundaries of NTZ and Marine Reserves are defined as a distance from shore, which is a relative boundary, in the legal bases. For example, the NTZ around Mona and Monito Islands, within the Natural Reserve are defined as one nm (1.85 km) from the coastline (Figure 5). This further complicates the definition and calculations to estimate the area of MPA protected in Puerto Rico as the reference boundary may vary due to different projections, minimum mapping unit used to define the coastline, changes in the coastline due to erosion and constructions. Any official database with geographic coordinates should include the datum, projection and line of reference used to project the seaward limits to be used correctly to calculate the extent of MPA in the local jurisdiction.

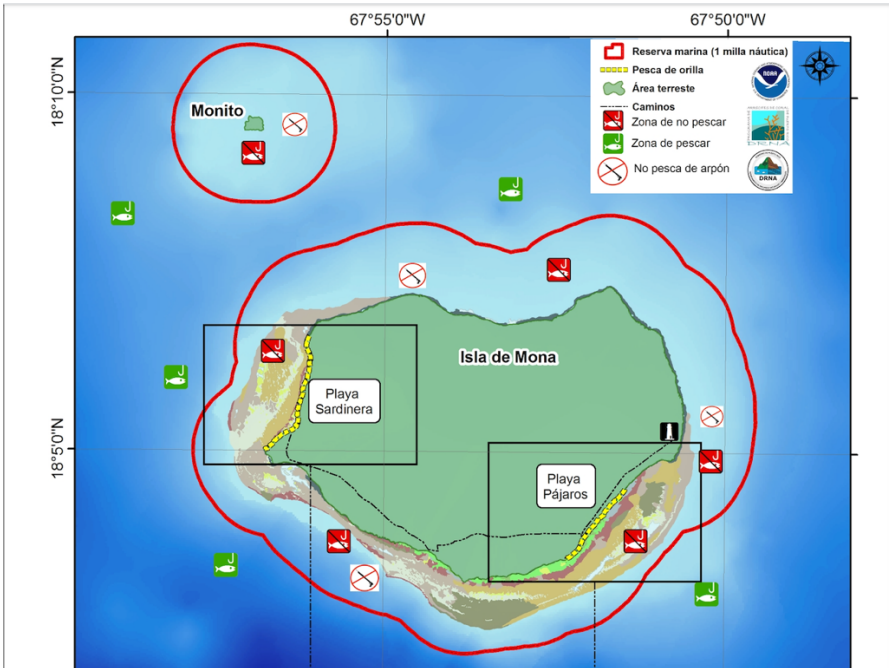


Figure 5. Mona and Monito NTZ boundaries.

Another discrepancy observed during this research was the official NOAA MPA Inventory database with spatial boundaries of Puerto Rico some MPAs differed. For example, in one MPA, Punta Guaniquilla Natural Reserve in Cabo Rojo the GIS layer is different (a different shape) from the one used by the DNER. This also affects the area calculations and the MPA Center has been made aware of the need for an update that includes new areas and corrects for these discrepancies as well. The lack of an official local MPA database led us to meet with local DNER officials and try to determine the correct version of the spatial data regarding all the MPAs. It is recommended that the Puerto Rico Planning Board and the DNER develop a joint database layer that can provide offical up to date information regarding the MPAs.

Other Effective Area-based Conservation Measures

While MPAs must have a primary conservation objective, this is not necessary for OECMs. OECMs may be managed for many different objectives but they must deliver effective conservation. They may be managed with conservation as a primary or secondary objective or long-term conservation may simply be the ancillary result of management activities (IUCN, 2024). Given the multiple governance jurisdictions that apply in the Puerto Rico territorial waters, there are multiple overlapping designations that could be considered OECMs.

One list of areas that was analyzed to determine if these could be considered as OECMs are the HAPCs that are within essential fish habitat (EFH) as designated in the Puerto Rico FMP (CFMC, 2019). The list of areas designated as HAPC in Puerto Rico includes many areas that are already designated as MPAs (Table 5). Under CBD criterium A, most of these would not be included as OECMs because they are already designated as an MPA. A few exeptions to this are El Seco, Vieques which is a known spawning site for groupers (Matos-Caraballo et al. 2006), JOBANNERR in Jobos Bay, which is a National Estuarine Research Reserve off the south coast as well as the state forest designations that include wetlands (mainly mangrove forests that may or may not be submerged), but no marine areas per se (Ceiba, Piñones and Boquerón) as defined by the criteria for MPA. Bajuras and Tiburones, Isabela is one HAPC that could also be considered OECM, however the information to evaluate the other CBD criteria are missing. According to NOAA the "HAPCs are designated through action by the regional fishery management councils (Councils) and do not convey additional restrictions or protections on an area—they simply focus increased scrutiny, study, or mitigation planning compared to surrounding areas because they represent high priority areas for conservation, management, or research and are necessary for healthy ecosystems and sustainable fisheries." therefore it is unlikely they are managed or are effective for the in situ conservation of biological diversity, as per CBD criteria.

Another list of marine areas that could be considered OECM includes the De Facto MPAs related to Anchorage or Danger zones of the marine environment (Table 6). These are under the purview of the USCG or military agencies that restrict some activities within the limits and could be considered to have an ancillary in situ biodiversity conservation. Further research is necessary to identify the types of habitats and species that may be receiving additional protection from threats that are controlled by this type of activity. Potentially an area of 817 km^2 could be considered OECM in Puerto Rico if the criteria are met.

Table 5. HAPC of Puerto Rico (NOAA) and area (km^2) of surface.

Name	Km^2
Steps and Tres Palmas, Rincón	0.6
Vieques, El Seco	0.9
Ceiba State Forest	1.2
JOBANNERR, Jobos Bay	4.1
Piñones State Forest	8.8
Pantano Cibuco, Vega Baja	9.6
Guayama Reefs	10.2
Bajuras and Tiburones, Isabela	15.0
Punta Petrona, Santa Isabel	24.6
Hacienda la Esperanza, Manatí	26.1
Rio Espiritu Santo, Rio Grande	28.9
Abrir La Sierra Bank	29.3
Tourmaline Bank	31.2
Bajo de Sico	31.2
Guánica State Forest	43.4
Tourmaline Reef	72.7
Desecheo Reefs, Desecheo	97.2
La Cordillera, Fajardo	100.8
Boquerón State Forest	141.8
Bioluminescent Bays, Vieques	160.8
Caja de Muertos, Ponce	192.9
La Parguera, Lajas	345.0
Mona/Monito Islands	1,158.4
Total Area	**2,535.0**

Areas identified by the US Fish and Wildlife Service as part of the Coastal Barriers Act in Puerto Rico include marine waters and islands covering an area of 262.2 km^2 (Table 7). Murry et al. (2019) provide a comprehensive analysis of some of these areas in Puerto Rico and the US Virgin Islands and how the biodiversity is affected by climate change. According to the CBD OECMs must provide "conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings" (CBD Article 2). For the areas listed in Table 7 data to determine if these areas meet the criteria for OECM as defined by CBD are lacking.

Table 6. De facto MPAs and area (km^2) of marine surface.

Name	Type	Km^2
Easterly, Westerly and Camp Tortugero Small-arms Range	Danger Zone	295.4
Culebra Island and Vieques Sound	Danger Zone	209.3
Eastern Vieques	Danger Zone	177.5
Vieques Passage Strip 1	Danger Zone	53.4
Vieques Passage Strip 2	Danger Zone	36.9
Vieques Passage Strip 3	Danger Zone	15.6
Southern Vieques Passage explosives anchorage and ammunition handling berth (Area 3)	Anchorage Ground	10.5
Vieques Sound explosives anchorage and ammunition handling berth (Area 2)	Anchorage Ground	10.1
Vieques Passage explosives anchorage and ammunition handling berth (Area 1)	Anchorage Ground	7.6
San Juan Harbor Restricted Anchorage F	Anchorage Ground	0.2
Bahia de San Juan	Special Anchorage Area	0.2
San Juan Harbor Temporary Anchorage E	Anchorage Ground	0.2
Ponce Harbor, Small Craft Anchorage	Anchorage Ground	0.1
Total Area		**817.0**

Table 7. USFWS coastal barriers and area (km^2) of marine and aquatic surface.

Name	Km^2
Punta Aguila	28.7
La Cordillera	25.9
Bahia de Jobos	25.7
Cayos de Barca/Ratones	19.0
Isla Cueva/Guayacan	14.3
Bahia de Tallaboa	11.6
Cabo Rojo	9.4
Cayo Berberia	8.1
Punta Jacinto	7.2
Bahia de Boqueron	6.9
Punta Vacia Talega	6.9
Cabo Rojo	6.7
Ensenada Comezon	6.6
Bahia Montalva	6.3
La Cordillera	4.9
Isla Culebrita	4.0
Punta Cabullones	3.7
Punta Guilarte	3.6
Cayo Algodones	3.2
Las Mareas	3.1
Arrecife Media Luna	3.1
Punta Guilarte	2.8
Punta Carenero	2.7
Rio Descalabrado	2.5
Laguna Aquas Prietas	2.4
Bahia de Jobos	2.2
Punta Salinas	2.2
Tortuguero	2.1
Ensenada Sombe	2.1
Punta Ballena	1.9
Penon Brusi	1.9
Punta Cucharas	1.6
Isla del Frio	1.6
Cabo San Juan	1.5
Ensenada las Pardas	1.5
Punta Viento	1.4
Playa Flamenco	1.4
Arenal	1.4
Rio Fajardo	1.3
Punta Manglillo	1.3
Luquillo Spit	1.3
Punta Vacia Talega	1.2
Punta Garza	1.0
Rio Mameyes	0.8
Punta Manati	0.8
Rio Maunabo	0.8
Rio Jacaguas	0.8
Juan Martin Spit	0.8
Punta Agujereada	0.8
Punta Cucharas	0.7
Puerto del Manglar	0.7
Bajio de Marea	0.7
Cayo don Luis	0.7
Playa Brava	0.7
Espinar	0.6
Punta la Bandera	0.5
Puerto Yabucoa	0.5
Rio Guanajibo	0.5
Chardon	0.4
Punta Tuna	0.4
Punta Pastillo	0.4
Punta Maracayo	0.4
Belvedere	0.4
Puerto de Arecibo	0.3
Bajura	0.3
Playa Larga	0.3
Boca Prieta	0.2
Coto	0.2
Punta Barrancas	0.2
Espinar	0.2
Total Area	**262.2**

Areas designated by the National Marine Fisheries Service, NOAA and recognized by the US Fish and Wildlife Service as Critical Habitat for threatened and endangered species (USFWS, 2024). At least five species, designated under the Endangered Species Act have critical habitats designated around Puerto Rico, however many of these are overlapping and would need to be viewed independently (Table 8). For example, two corals, *Acropora cervicornis* and *A. palmata* have the same boundaries of marine areas designated as critical habitat, therefore these should not be counted twice. However, these areas aren't managed differently from the rest of the marine realm, which prevents them from meeting the CBD criteria for OECM. The only difference in the activities conducted in these areas is for permitting, where federal funding is employed in the activity proposed. Federal agencies of the US must ensure that they are not contributing to the decline of threatened and endangered species by affecting their habitat via consultation.

Table 8. Critical Habitat areas designated for threatened species and area (km^2) of marine surface.

Species	**km^2**
Acropora cervicornis	3,506
Acropora palmata	3,506
Epinephelus striatus	233
Chelonia mydas	248
Eretmochelys imbricata	311
Total Area	**7,804**

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